Coates (B. H.)

AN ORATION

ON CERTAINTY IN MEDICINE.

DELIVERED BEFORE

The Philadelphia Medical Society,

FEBRUARY 10, 1830.

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PUBLISHED BY THE SOCIETY.

Philadelphia:

PRINTED BY JAMES KAY, JUN. & CO.

1830.

TO

PHILIP SYNG PHYSICK, M.D.

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA, &c. &c.
PRESIDENT OF THE MEDICAL SOCIETY.

Allow me to grace the following paper by prefixing to it the name of one, honoured by my country as her first and favourite surgeon, who was my father's friend, and I feel authorized to add, my own. In the checquered course of a professional life, there is no better or more honourable gratification than the approbation of those who have risen to high eminence by the means, acknowledged by every one, of scientific merit and sterling integrity. That Dr PHYSICK may long continue to enjoy the honours and repose of age, earned before the time, unassailed by envy or reproach, is the earnest wish of thousands of his fellow citizens, and of none more so than of the author of these sheets.

ORATION.

Gentlemen,

In the course of revolving years, your partiality has at present selected me for the flattering duty of delivering your annual oration. With whatever feelings of diffidence, and fears arising from the oft-trodden character of the task, I may address you, the honour of the choice is an adequate warrant for confidence in attempting its execution. It is, at the same time, a responsibility sufficient loudly to call for every research into those hitherto unexplored ramifications of medical inquiry which may have escaped my acute and eloquent predecessors. In these humble efforts "to detect untasted springs" from "the laureate vale's recess," I must beg of you to forget the happier flights to which you have been auditors in former years.

And yet, methinks, when we cast our eyes around the domain of medical knowledge, there appears no lack of materials. The remark has often been made, that, in a progressive science, it is useful, from time to time, to recapitulate, by taking a general survey of the progress already made. True as this maxim undoubt-

edly is, at all times, it has probably never been more correct and applicable than at the present moment. "We live," said the venerable Rush, "in a revolutionary age: our science has caught the spirit of the times." If this was the case in his day, it is perhaps far more engrossingly so in our own. The torch of physiological analysis, which, kindled by the genius of our countryman, yielded in his hands an unsteady and flickering flame, now glares with a broad and portentous lustre, threatening utter ruin to the decayed edifices of medical antiquity. From the bosom of that same France whence sprung the most tremendous convulsion that ever remodelled the political world, has issued a code of new doctrines, and modifications of old ones, which have progressively invaded surrounding nations, seeming likely to alter the whole face of our science, wherever cultivated by civilized men. Some minds grasp at the brilliant novelty, as destined completely to supersede all previously existing knowledge; while others, particularly of the older class, denounce it as one of those fluctuations of opinion which have passed at intervals over the medical ocean, leaving the general mass, in their estimation, at nearly the same level. While some consider medicine as in a state of progressive improvement, others imagine that it undergoes nought but a series of unprofitable convulsions; that the ancients were just as successful practitioners as those of the present day, and that the medical theories of Galen and Paracelsus were exactly equivalent in utility to that of Broussais. Others have actually been known to carry this medical scepticism still farther, and boldly assert that all medical theories are equal in truth and propriety, and all modes of practice alike in success: they laugh at the enthusiasm of the ardent investigator, and deem his toil

wasted in endeavouring to discriminate between modes of belief which are alike indifferent. How such doctrines can be reconciled with the reception of medical fees, we will not now stop to inquire; nor why, in this more than algebraic equation of variable quantities, the charge of the sick might not be quite as safely left to the nurse, who is generally a faithful though ignorant retailer of some of the doctrines of Boerhaave, and who is sometimes possessed of more practical experience than the physician. Minds again, of another class, are in continued search of originality, seem to consider those opinions, upon which prescriptions designed for the preservation or comfort of human life are to be founded, as a proper subject for invention, and so far confound the boundaries of poetical beauty, and the dry, every day duty of attending the sick, as to prefer a neatly turned and plausible hypothesis to the actual results of experimental trial. From persons of this description must have been drawn the character delineated by the satirist, who was induced to devote himself to the profession of medicine by some slight glimpses bestowed on him, in his reveries, of a new theory of fever! Nor are such opinions confined to the profession: they have crept, with other doctrines of the past centuries, into the minds of the public at large. We occasionally hear the same ground taken in general society. The chemist and the mathematician would be shocked at the thought of assuming any point as correct without first painfully subjecting it to their respective modes of demonstration; yet, in the far more difficult and obscure subject of human vitality, and the incomparably more important questions of human life and health, they are willing to subject their minds to the guidance of beautiful hypotheses and plausible conjectures.

With such views we cannot coincide. Dearly do we love the enchantments of the muses; and inappreciably do we estimate those faculties which shed around the humblest path of life, if blessed by literature, charms of lofty conception, which are often supposed to belong exclusively to the minds which control the great events of the world. A man of active and cultivated imagination may find the pathway of his life overshadowed with rayless obscurity, or obstructed and crossed by disappointment, disaster, and obloquy; but not all these can quench the god within him. He can still, withdrawn from the world and its agonizing conflicts, commune with the spirits of power, whose intellects, belonging to all mankind, spurn the bounds of ordinary space and time, and combine distant regions, with ancient and modern ages, in a common sympathy. Homer shall talk to him as a friend, and Socrates as an acquaintance. The master mind, by the skill and familiarity with which it appeals to and awakens the inmost feelings of his soul, shall render to him the flattering assurance that there is an identity in their thoughts and natures. He shall be lifted from the dull mass of ordinary reality which surrounds him by a proud companionship with the lofty genius of an admiring age, and, elevated to "the brightest heaven of invention," he shall, for a while, forget his woes. Yet this precious gift of creation, like others, has its proper sphere; nor can the sacred flame be taken with impunity from the altar to which it belongs. The same nature which fitted genius for lofty and brilliant aspirings, has provided for the investigation of science a very different set of powers. For the accumulation of facts, there is required a careful adherence to truth; and for their comparison and classification, a rigid examination

of all their accompanying circumstances, and an unvarying rejection from the domain of demonstrated science of all those resemblances which are found deficient in any important particular. Hence, in the pursuits of exact and inductive science, and in those of imaginative literature, such a very different class of intellects are called into requisition as to give rise to a common impression, that the same minds are necessarily unfitted for pursuing them both. To discuss this would require a length of time not afforded upon the present occasion. Enough is perhaps said when we allude to the numerous list of those who have shone as physicians, and who were, at the same time, votaries of the lighter muses; to the names, for example, of Garth, Arbuthnot, Akenside, Armstrong and Darwin, of Linnæus, and of the great Haller. It is enough, surely, to exemplify why, in the words of one of those just cited,

> "The wise of ancient days ador'd
> One power of physic, melody, and song."

Yet, when we proceed to the application of the faculties, the case is widely different. If there be any general characteristic by which modern science can be distinguished in a peculiar and striking manner, it is that of accuracy and certainty. Among the ancients, the sciences of observation were generally left in a crude and undigested state; while the only one whose principles appeared to be firmly and incontrovertibly settled, was a doctrine almost purely intellectual—the mathematics. In this predilection for abstract and argumentative study, we are to find the cause of the perpetual disputes which agitated the schools of antiquity. With the single exception just named, nothing was referred to the unfailing test of

observation, and, of consequence, nothing was settled. After the startling and impressive career of Paracelsus, and the logical analysis of Bacon, may be considered as commencing the modern school of science. If from the former our forefathers learned the existence of some part of that multitude of things "not dreamt of in their philosophy," it was by the latter they were taught, in most of the natural sciences, the value of certainty; and nearly all the inquiries of modern times are closely regulated by a constant appeal to fact and to nature. The conspicuous results of this are the boast of our æra; they fill the pages of every historian, and every writer on the cultivation and prosperity of man. Old branches of science have received accessions far beyond what their most ardent admirers would have imagined possible; while our shelves are crowded with the volumes elicited by the discovery of new. Nor does the increment of human knowledge stop with the mere augmented supply of food for the understanding; the actual comfort of man has increased in a corresponding proportion. We exchange the productions of remote regions with the most unfailing regularity; we travel immense distances by complicated machinery; we receive, in the farthest corners of the earth, the labours of gifted minds in foreign nations; and we tax sea, land, and arctic ice for the domestic luxuries of our firesides. We describe and catalogue each herb that rises in the convict-peopled regions of the antipodes; we force the satellites of Jupiter to guide us across the ocean; we reconstruct, from a few decayed fragments, those gigantic forms which peopled the forgotten antediluvian world; and we calculate the orbits of those strange and portentous visiters, whose approach from the unknown regions of space was formerly a source

of terror to the arbiters of empires. Nor can it be denied that we owe all these astonishing triumphs of human intellect to close observation and inductive philosophy.

If such and so wonderful are the results of close principles of research, when applied to those sciences, the object of which is the attainment of physical luxuries, or the simple pleasure of exercising the human understanding, how much more desirable is it that the same method should be adopted in that one which teaches the preservation of health and the prolongation of life! When I search for means of conviction or persuasion to confirm this inference, the impression I receive is, that to so obvious a proposition no additional force can be given after it has been simply stated; that it is so direct an appeal to the good sense and good feelings of the medical practitioner as, by its own nature, to admit the accession of no further strength. Yet, when we contemplate the fact, how little do a large portion of medical theories appear to have been governed by a reference to this principle! Ingenuity seems to have exhausted itself in inventing strange and uncouth modes of explaining the phenomena of health and disease. The misapplication of collateral sciences, the hypothetical assumption of the infallibility of the ancients, the deterioration of these by erroneous translations, all were not enough; but the independent doctrines of the times must present a mass of absurdity, which renders the history of medical opinions a tiresome chaos of wild speculation, scarcely relieved by the appearance of those eminent individuals who have stepped forwards, with almost the rarity of epic poets, to reorganize the confusion, and reduce the mysticism to intelligible science.

But let us cease to consider the errors of finespun and imaginative doctrines, and examine the opinions of another class of physicians. There are who profess to discard theories altogether, to found their opinions exclusively upon facts, and to defend themselves from all assaults by a constant appeal to their own experience. The respected practitioner, high in the confidence of his profession and of the public, frequently disclaims all reliance upon doctrines of any description, and avers that he is guided by a simple appeal to the occurrences which pass before his eyes; or challenges, in other words, the character of a pure empiric. Such a man has frequently become disgusted with the theories of his youth, and by a process very common and natural, is apt to infer that there exist no better, and that he should reject them all. We might commence our reply to him by denying that he is free, as he supposes, from the stigma of theorizing. The veriest quack that ever existed, if involved in explanations and controversy, will let fall evidences of his having formed and acted upon theories, frequently the wildest and most absurd, but still entitled to the name. One entertains the conviction that his lancet extracts "the bad blood," and his leeches "the bruised blood;" another, that his steam bath and diaphoretics are to bring the disease out through the skin; and a third, that the disease, like a poison, is to be cured by an antidote, to ensure the presence of which he combines a variety of articles, as the sea captain mixed up a dose from all the drugs in his medicine chest, in order that, like a load of grape shot, if one of them missed the mark, another might hit it. A disease is continually presented to the fancy of even the educated physician, as an independent existence which haunts the animal economy: it is capable, accord-

ing to such, of being driven from place to place, and possesses a life of its own, fed by morbific causes, and destroyed by properly directed remedies. We are so much in the habit of personifying diseases in our readings and discourses, that we are apt to erect them into a kind of evil spirits, which are to be exorcised from their malicious sojourning by a sufficient quantity of powerful drugs. To divert the mind from these habits of thinking to the consideration of the "state of the system" in health, and the nature and extent of the deviations from that condition, which it is suffering in any given case, was the object of the exertions of our Rush, when he declaimed against methodical nosology; and is now that of the French reformer, who has qualified the system he attacks by the appellation of ontology. The error they thus combat is truly a theory, and one worthy of the darkest ages of the magic and the cabala. Another error into which Rush himself fell, and which pervades a large mass of our medical contrymen, is the idea that the aortic system of blood vessels is an exact measure of the condition of "the system" generally; that the pulse is a true "*nosometer*" to the human frame, and that the augmentations and diminutions of excitement affecting health, must have this as the proper sphere of their operations. Many of his pupils, and sometimes the respected leader himself, evidently imagine, if we may judge from their language, that the system generally and that of the blood-vessels are identical, and that observations made on the one are true of the other. These views may be traced as the origin of no small share of the perishable part of Dr Rush's opinions.

All these are theories; theories, too, which have the greatest possible bearing upon daily and habitual

modes of practice. We pause here, in the midst of a train of examples, which might easily be adduced to swell the list of systematic opinions, often entirely hypothetical, entertained and acted upon by those who conceive that they are abandoning theory altogether. If thus mistaken in the doctrinal grounds they really assume, how do they draw correct inferences from facts, or even observe them with precision? This shall be our next subject of inquiry.

It is a remark a thousand times repeated, and the truth of which is acknowledged by every one, that experience is the proper test of all medical questions; and hence the high confidence reposed in those who are understood to possess that desideratum, and the peculiar weight conceded to their opinions. In all discussions relative to the correctness of medical doctrines or medical practice, the appeal to experience is considered final; and, in the mouth of the highly respected, is often found to repress the freedom of discussion. The proposition stated is undoubtedly true; but we apprehend we should be led to somewhat different applications of the rule, were we to inquire carefully and analytically what experience really is. What is sometimes styled such is often extremely vague and fallacious. Experience is by no means in a simple proportion to the number of patients actually seen by a physician, but depends also upon various other requisites. It is not only necessary that we should enjoy the opportunity of observing; we must also possess the time and the power to do so. The hasty running from one to another of a large mass of sufferers, does not of itself qualify a man so well for the future exercise of judgment, as the inspection of a smaller number, when more time and pains are employed upon them. It is

not an uncommon occurrence to meet with practitioners who, when they hear of cases and observations published as new, allege that to themselves these are familiar, similar events having taken place, perhaps repeatedly, in their practice; but who, nevertheless, have neglected to make these known by publication or otherwise, have left unexamined many particulars respecting them to which attention would have been called by a previous inquiry, and perhaps ran the risk of forgetting them had they not been reminded of their existence by the similar remarks of others. These furnish a strong example of the imperfection of observations which have not been compared with those of other men, and exhibit in a clear light the necessity of combining the physician's private and personal experience with that of his predecessors and contemporaries; or, in other words, of associating practice with reading. And hence we see, what is generally acknowledged, but in too frequent instances not acted upon, the propriety, and, indeed, urgent duty of keeping up the literary character of the profession, supplying ourselves with libraries of practical works, and turning them to profit with assiduity and perseverance. The physician who studies nature by means of his own opportunities alone, deprives himself, quoad hoc, of one of the greatest advantages of letters and civilization. He loses that accumulation and comparison of knowledge which are produced by the co-operation of numerous individuals; and leaves, in this respect, the advanced state of society to imitate the condition of the rude practitioner of a barbarous age and country.

Having thus endeavoured to point out instances of the very great frequency with which erroneous and imaginary views have been assumed as the basis of the most

important and practical decisions, it is our next duty to sketch, as far as we can, some of the principles on which we would ground a mode of study which we believe to be more correct.

Medicine has been stigmatised as an "ars conjectandi," a mere habit of more or less felicitous conjecture. Let us labour to avoid the application of a maxim so unworthy of this age and of modern science. Ours be the precept of Hoffman, "Ars medica tota in observationibus." To which, in imitation of a modern writer, we will append the remark of Morgagni, "Neque enim numerandæ sunt, sed perpendendæ observationes."

A real knowledge of nature consists simply in an acquaintance with natural facts. This definition does not exclude either principles or classification. A principle has been sometimes, not improperly, called a general fact: the stating of it is an assertion which expresses a number of facts at the same time. Thus, "my apple falls to the ground," is the expression of a simple fact. That "all bodies attract each other with a force varying inversely as the squares of the distances," is a principle, or law of nature. Both these are equally facts; but the principle is a fact which embraces many others. In addition to the character we have just ascribed to it, its expression in words is no less an act of classification; it groups a large number of natural occurrences by their common resemblance. Hence an inquiry which is exclusively confined to facts, may extend to such a comparison of them as shall embrace a doctrine and a classification. This classification supplies us with what, in so many branches of natural science, is found the surest and best, if not only guide, the probability derived from an-

alogy. These are the real limits of a physical science; and whatever is added to them lacks the true, original foundation of natural certainty—the evidence of the senses.

In our inquiries into nature, it is necessary to begin by examining what amount of information has been collected, relative to cases similar to those we are investigating, by the observers who have preceded us. In doing this, we at once encounter a serious and apparently endless difficulty. Statements the most contradictory abound in our medical writings in relation to a surprising variety of matters admitting of dispute, and especially perhaps in the department of therapeutics. The reports of the action and process of remedies vary in the most surprising manner. How are we, therefore, to discriminate? And in what alleged results of experience are we to place confidence when we find them gainsaid in the most direct manner by writers of authority? The reply to this is, that we are to be guided by the same principles of evidence which are proper in all other cases; such as, with the exception of rules purely technical, are those acknowledged by lawyers. We must study how to select such statements as bear the marks of truth, and endeavour to judge of the author's competency to observe, and of his real intentions, candid or otherwise, in giving his narration. To do this requires some proficiency in the most difficult of all sciences—the knowledge of human nature. Yet, when pains are taken, it is not always difficult to judge of an author's intentions, or to select the real lovers of truth. We are safest in preferring those who candidly allege facts which militate against their own opinions; those who leave unexplained difficulties which have been created

by the historical statements they have themselves made, knowing them to be inexplicable; those who narrate instances of their own failures, the most trying test, perhaps, of the candour of a physician; those who acknowledge their imperfections, and appear open to conviction from new observations, and, generally, those who manifest labour and accuracy in the investigation of facts. The competency of an author to observe, is another condition necessary to assuming him as an authority. He must have had opportunities of witnessing disease; he must have actually observed during those opportunities, and this not by merely suffering natural phenomena to pass before his eyes, but by a careful direction of his powers of attention to them; he ought to have a knowledge of the facts alleged or expected to be found in similar cases; and he ought to possess an acquaintance with the ordinary phenomena of health and disease, sufficient to enable him properly to discriminate. When an individual has given evidence of these qualifications, his testimony is invaluable, and should always receive a decided preference in judging, over that of less qualified persons, or of those whose reputation, in these respects, is established on foundations not equally certain. As a bright example of the peculiar merit we have here attempted to pourtray, we may cite the name of the illustrious Sydenham.

The character which we have been giving to the physician whose writings deserve to be considered as authority, will form the best guide for him who aims at certainty in his investigations for the private satisfaction of his own mind. It is found by ingenious men to be so much more easy and tempting to form long trains of ratiocination than to collect facts with precision and assi-

duity, so far more frequent are errors of the former than of the latter species, that the caution against the disposition to form theories without sufficient consideration of the facts, is undoubtedly the principal guard required in the investigation of medical certainty. The first and last duty is to observe facts with precision and completeness. Every thing should be excluded that is not ascertained by real observation. They should be examined, and, if convenient, written down, in a state of careful separation from all expression of the observer's peculiar opinions. If he preserve the record, he may reduce his inferences to writing, and append them to the end of his notes; but the notes themselves should be kept unadulterated with any points of belief. The reason for this, in addition to the very great probability of some of the observer's ideas being erroneous, and consequently lending a false light to his perceptions, is, that our knowledge of the laws of nature is incomplete, and that principles may be concerned of the existence of which no one is at present aware. Hence, even the best informed, while he draws his present inferences, should leave the facts unchanged for his successors, or for his own inspection at a time when future acquirements shall enable him to see them in a different light.

There is one circumstance which creates a vast difference between medicine and most of the corresponding natural sciences, to the wonderful progress of which we have formerly alluded. It is that a great part of the qualities of vitality are unknown, both as regards their nature and the conditions upon which they depend; and such are the great obscurity of the animal economy, and its variety in individuals, that it is not improbable that this will always continue to be the case. The con-

sequence is that a problem in physiology or disease can never have all its conditions known; and inferences apparently well demonstrated are liable to prove incorrect from the operation of causes which cannot possibly be taken into consideration. Hence we are obliged to submit our reasonings to a still more close and immediate comparison with facts than under ordinary circumstances; and cannot admit of those long chains of consecutive reasoning which are the source of so much beauty to some of the collateral sciences.

Nor is medical certainty, when obtained, or such as it can be obtained, by any means identical with what is considered such in those branches of study which relate to unorganized matter. We cannot set this difference in a stronger light than by using as a text the "rules of philosophizing" adopted by Sir Isaac Newton in his Principia. They are, 1. Never to assign for a phenomenon any cause which is not known actually to exist. 2. Never to assign for a phenomenon any cause which is not known to be adequate to produce it; and 3. Never to assign for a phenomenon more causes than are sufficient to produce it. To the propriety of these rules the human mind gives a natural assent, and they justly occupy a station in his great mathematical work somewhat similar to that in which are placed those propositions usually assumed as self-evident truths. They form with him the connecting link by which his profound and astonishing researches in abstract doctrine are connected with the points established by observation. The only doubt and subject for wonder is, that they could be applied to such a vast series of deductions, all legitimately enforced according to the strictest rules of his severe science. In philosophizing, to borrow the illustrious Newton's

phrase, for our own science, the first of these rules is strictly applicable, and should be uniformly enforced. By so doing, we should sweep away at once a great mass of the theories, so called, that have occupied much of the time of our predecessors, and some of our own. Science, however, would be a gainer by the change. To assign no cause for a phenomenon but such as is known to exist, is, indeed, a necessary part of all proper inductive philosophy; and we shall now dismiss this, and proceed to the two others: "Never to assign for a phenomenon a cause which is not known to be adequate to produce it," and "Never to assign for a phenomenon more causes than are sufficient to produce it." These both require a knowledge of the extent of the operation of morbid and curative causes, which is rarely to be obtained with accuracy, and still more rarely with such absolute certainty as is furnished in the mixed mathematics. In those parts of physiology which are founded on the same principles that regulate ordinary inorganic matter, as, for example, in the optical theory of the eye, this species of certainty may be considered as achieved; but these can scarcely be viewed as properly coming within the domain of the science, of which they rather form an appendage or illustration. At least, if they are to be so classed, it must be acknowledged that they stand aloof, unconnected with the rest of the functions by any analogy in the principles on which they depend, being produced, not by the powers of vitality, but by those of pure physics. When we come to processes that are carried on by vital actions, we shall find that the same visible causes by no means produce the same effects with any absolute uniformity. A man shall suffer with violent inflammation of the stomach, produced by a dose of

arsenic, and this state of things be followed by high inflammatory fever. Another shall take the same poison, and undergo the same inflammation, but with scarcely any fever. A third shall suffer a much slighter inflammation, with little or no fever, and shall exhibit a catalogue of very severe nervous symptoms, which the others, perhaps, never lived to endure. How, then, is it possible, in such cases as these, to judge with precision of the sufficiency of the cause to produce an assignable effect? A degree of dissatisfaction is left on the mind by our best inferences obtained in this way, which is not experienced in the mixed mathematics. Yet these rules define a mode of drawing inferences, which, if we adhere to it, will keep us more closely to certainty than any other with which I am acquainted; and will sometimes lead us to determinate and satisfactory conclusions, with a strictness which, in such a science, might hardly be anticipated. We will give an example, not as embracing the whole of the question to which it alludes, but in order to exhibit the application of the principle.

Shall we assume that inflammation of the pleura is the cause of the symptoms called those of pleurisy? First question. Is it known to exist in such cases? Answer. Yes. This is proved by dissections. Second question. Is it sufficient to produce such phenomena as are exhibited? Answer. Yes. It has produced them all, when itself occasioned by external injury. Inference. Then assign it as the cause of the symptoms of pleurisy; and assign no other, according to the third rule, because this is sufficient.

This deduction, then, if we waive all consideration of the preliminary points, exemplifies what may be call-

ed *medical certainty;* a certainty not equal to that of the mathematics, but such as the case admits, and all that we shall probably ever have to guide us through our anxious career of practice. It is far more, too, than many of the doctrines which have for a while borne undisputed sway, have ever possessed. It is that which belongs to the science, and at which we should aim in forming our opinions.

There exists a department of medicine, to which modern observation alone has given origin; and which, conformably to the genius of the times, possesses a character peculiarly certain and cognizable by the senses. This department is Morbid Anatomy. Its advantages are owing to the phenomena it reveals being more clear and distinct, and less variable than those which are exhibited in a living subject affected with disease. They possess the qualification expressed by the critic, "oculis subjecta fidelibus," they are actually *seen*, and from this cause are far more satisfactory than any symptoms that indicate affections of an organ not visible upon the surface of the body. In other cases, the medical attendant witnesses a variety of appearances, from which he infers with more or less accuracy, the situation of the malady in some internal part; but his conclusions are liable to all the sources of fallacy to which we have already alluded. In the instance of dissection, or, what in this respect is analogous, of disease situated at the surface of the body, he beholds phenomena which at once and immediately reveal the condition of the affected part itself. Hence these two classes of observations form the best points of departure for medical doctrines; they form a solid foundation upon which the rest of the edifice may safely repose; they furnish clearly established

natural truths with which others may be compared. From one of these is drawn the distinct elementary idea of inflammation; which, studied at the surface of the body, is beyond all comparison the most accurate, and, in the present state of our science, the most generally applicable that our medical doctrines possess. By the other we are enabled to institute comparisons between the affections of which we have thus acquired a clear apprehension, and those which are produced within the interior of the body; following in this the well established rule of proceeding from the known to the unknown. These considerations furnish the strongest argument which can be alleged in favour of what is called the *anatomical* or *organic medicine;* or that which refers all diseases to some local origin or situation. All those medical ideas which can be fairly deduced from the observation of local appearances, derive from this cause a degree of certainty incomparably superior to that of any others. We are here no longer lost in vague hypotheses and loose and indistinct definitions; but have continually before us the clear and unerring light of truth.

Having proceeded thus far in developing our ideas of the principles on which should be conducted the search after medical certainty, allow me next to cite one or two sources of error, which have themselves a direct and powerful bearing on both doctrines and practices of the greatest importance. One of these arises from forgetting that, in a great number of diseases, including particularly the class of fevers, a large majority would in all probability recover by the unassisted efforts of nature herself. A physician, for example, has been long in the habit of employing a particular method in treating the affections last named; and finds the great majority ultimately

get well in a moderate time. He sees some different mode of practice employed with inferior success; and therefore justly prefers his own. It is however urged upon him, in books or in conversation, to modify his practice in some respect; and various reasons, of more or less cogency, are assigned for the recommendation. His reply is, that whatever force may be found in the reasoning offered to convince him of the propriety of a change, experience and the success of his practice sufficiently demonstrate its advantages; and that arguments alleged in favour of modifying it must, of course, be erroneous, although it is not necessary or convenient to discuss them in detail. Or, without expressing an opinion of the doctrines offered, he may simply say, that his method has answered well, and, having tested it for years, he is not disposed to enter on new principles of cure, until he shall meet with some disappointment in his own. Now in all this there is a serious fallacy. How does the physician know that his practice is equally successful with that which is proposed to him? How is he even sure that he meets with more success than would be achieved by nature alone? These points cannot be established in general terms, without instituting a careful comparison in a manner extremely difficult, if not impossible, among the general practice of a physician. Cases would have to be selected, possessing, as nearly as can be judged, the same degree of danger; and a record kept of the proportion of recoveries under each of the two modes of practice; while, in order to render the comparison complete, it would be necessary to do what humanity forbids, to allow another portion of the patients to be left without any medical treatment whatever. As we cannot institute experiments like these, we must content

ourselves with carefully observing such facts, of various descriptions, as are made known in ordinary attendance on the sick, such, in fine, as are actually used by the most rational inquirers into pathology and therapeutics. Yet we have certainly made sufficiently apparent the weakness of the argument arising from what is called *general success;* unless at the same time we are assured that care is used in discriminating, and that a close attention is habitually paid to the facts which really offer themselves. General success was for a long time claimed, it is not to be doubted, by those surgeons, who, in a former age, treated every wound by a tent introduced for the purpose of making it heal from the bottom. Yet we now find that the practice alluded to was a positive injury to the patient, actually preventing, as long as it operated, the cure it was intended to promote. Numerous errors, too, in the alleged success of practice, have arisen from inaccuracies in pathology and diagnosis. It is now generally acknowledged, that many asserted or imagined cases of pulmonary consumption, have been really instances of chronic catarrh. It is altogether probable that some of the supposed recoveries from chronic catarrh have been cases where there existed a few tubercles,—cases of pulmonary consumption, in short, recovered by the natural process described by M. Laennec.

On the first appearance of a body of new doctrines, there have always been many persons who push them to an extravagant length; and the misapplication of a theory to facts which it does not include, is a well known and fertile source of error. Another, perhaps equally important, is the rejection of a doctrine on too slight grounds. From the simple circumstance that one is born in a particular country, there is derived no right to infer that

the observers of another section of the world are to stand still, and contribute nothing to the advancement of science. To reject a whole body of careful observations, upon the ground of some slight point which we conceive we can disprove, is to forego the advantages of the progress of knowledge, and to suffer science to go beyond us, while we remain quiescent. The true philosophy is that which in ancient times received the name of *eclectic*, and is derived from every accessible source, following the advice of the apostle, to "prove all things, and hold fast that which is good." Against this simple and rational principle the objection has been made by some very acute and able writers, that the selection from different sources involves inconsistency. It does not appear to us that this is at all necessary, excepting always those occasions where human knowledge is inadequate to the explanation of facts. In these, clashing and inconsistency are indeed unavoidable; and there will probably continue to be such instances to the end of time. We should certainly aim at preserving consistency in our doctrines as far as we possibly can; but this should not prevent us from being careful to augment our facts and comparisons, and re-examining our principles as we advance in knowledge, as well as we are enabled to do it by those faculties which Providence has bestowed upon us.

We not unfrequently hear general expressions of disapprobation employed in speaking of theories and theorizing, from a confusion of ideas in the use of these terms, and that of the word "hypothesis." Hypothesis, as commonly used, appears to convey its proper etymological meaning*; which is a "gratuitous supposition,"

* From ὑπὸ and θέσις, literally "a supposition."

such as is advanced for the mere purposes of argument. Theory, on the other hand, means etymologically neither more nor less than *contemplation*;* a process with which no one certainly can dispense who wishes to escape the imputation of acting inconsiderately. To rail at theory, as such, is to ask the reason of man to stand idle; and to demand that the practitioner of medicine should refrain from considering the facts which present themselves to his eyes, in their various relations to each other. And we may safely add, that to confuse theory and hypothesis is an error of greater importance than the mere violation of the meaning of an English word; it has practical results of an injurious character, giving rise to the rejection of much valuable study of nature, upon the *hypothesis* that it is hypothetical.

Such, gentlemen, are the views which have been suggested, on the present occasion, by the subject of medical certainty. Let it not, however, be inferred from these, that we entertain the impression that such certainty as that just described, is of general or easy attainment. Far otherwise is the melancholy fact. Such are the deficiencies of our knowledge in many parts of the practice of medicine, that we are continually forced to depend for our guidance upon the weaker light of a more or less obscure analogy; and, in too many instances, left altogether without resource, and urged by imperative and undeniable duty, to stand idle. Yet is it on this account any the less incumbent on us to distinguish and prefer, as far as lies within our power, the surer rules of legitimate inference? The late eminent

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* Θεωρία, "contemplation," the deliberately looking at a thing.

American physician whom we have already twice quoted, imitating the celebrated funeral instructions of Archimedes, has gone so far as to say, on a public occasion, that he should wish no better inscription for his tomb, than that "he was an advocate for principles in medicine*." Science is no longer the exclusive possession of individuals: to extend and complete its researches, in the present age, employs a multitude of heads and hands; yet the growing numbers and illumination of the human race, which render each large city as ample a sphere of fame as classic Athens, and each one of several rival nations as rich in learning as the whole Roman empire, make it perhaps sufficient praise for even a Rush's genius to be a useful instrument in the increase and dissemination of knowledge. Nor is there any mode in which valuable additions are likely to be made to our science, for the service of future generations, other than by ACCURATE INVESTIGATION OF FACT and by INDUCTIVE PHILOSOPHY.

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* Sixteen Introductory Lectures, p. 362.